29. The apparatus according to claim 28 further including:

means for receiving a first selected group of commands prior to the recognition signal being output.

30. The apparatus according to claim 29 in which the lock command is within the first selected group.

31. An apparatus for remotely controlling automobile functions comprising:

a housing;

a semiconductor substrate coupled to and supported by the housing;

a plurality of position sensing devices positioned within the semiconductor, the position sensing devices being organizable into a plurality of segmented groups; and

a fingerprint recognition circuit coupled to the semiconductor substrate to recognize the patter of a fingerprint on the position sensing devices and output a signal indicating a match;

a command receiving circuit coupled to each group to sense whether a human appendage is adjacent the group.

REMARKS

Claims 1-23 are presented for further examination. Claims 1, 2, 4, 11-17, 20 and 22 have been amended.

In the Office Action mailed June 4, 2002, claim 1-4, 6-20, 22 and 23 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,577,345 ("Abramov"). Claim 5 was rejected as obvious over Abramov in view of U.S. Patent No. 5,963,679 ("Setlak"). [Page 4, Paragraph 2 of the Office Action states that claim 3 was the one rejected over Abramov in view of Setlak, however, it is clear from the Examiner's remarks that claim 5 was intended and the reference to claim 3 is believe to be a typing error. If it is not a typing error, then claim 5 was never rejected and even though this is indicated on the first page. Thus, this reply will address the Office Action as if claim 5 were intended; but as will be pointed

out herein, it is believe that claim 5 is allowable in light of the art.] Claim 21 was rejected as obvious over Abramov.

Applicants respectfully disagree with the bases for the rejections and request reconsideration and further examination of the claims.

The disclosed and claimed embodiments of the present invention are directed to a sensing apparatus and the method thereof for sensing the position of human appendage at specific locations on a substrate. The sensing devices are electrically connected and organized into groups positioned at selected locations on the sensor. Unlike the general fingerprint sensor such as that disclosed in Abramov, the present invention is made by a plurality of groups of the position sensing devices.

Abramov is directed to a method and apparatus for sensing the pattern of an individual's finger. He does not teach that the sensor can be used to input a plurality of different commands. Abramov discloses only fingerprint recognition for transforming the fingerprint pattern of ridges and valleys of an individual into corresponding binary electrical output signals. The sensor of Abramov, as shown in his Figure 4, has an IC chip having an array of sensing circuits 14 arranged thereon in rows and columns for defining X, Y coordinates. There is no description or indication that these are segmented into groups; they are not. Certainly, Abramov does not use his device to enter commands; it is for recognition only. The lock open or lock alarm results are from the same recognition sequence, not from a separate command.

Turning to the claims, claim 1 recites an apparatus that comprises a substrate, a plurality of position sensing devices, a plurality of groups of the position sensing devices, and an electronic logic circuit coupled to each of the groups. Claim 1 further recites that each group is electrically segmented and located at a selected, respective position on the substrate.

Specifically, claim 1 states that each group is composed of a plurality of position sensing devices and each group is functionally segmented and each group is located at a selected respective position on the substrate. Some examples of claim can be seen from viewing figures 2B-2E and understood from the text describing these figures. For example, figure 2B shows the segmenting of cells 2 into four different groups, an upper group 40, a lower group 42, a right side group 44 and a left side group 46. These groups are each composed of a plurality of sensing cells 2, the sensing cells being shown in figure 8. The groups are functionally segmented from

each other using appropriate software controls or electrical switching. Thus, a touch in the upper group 40 can be sensed as a distinct location from a touch in the lower group 42. Further, a touch in the group 46 can be sensed as a distinct different command from a touch in any one of the other groups 40, 42, or 44. According to principals of the present invention, the touching in the different segmented groups can be used to input commands after the fingerprint has been sensed. For example, a touch in position 42 followed by a touch in position 40 can input a command to lock the car. A touch of the sensors in group 46 followed by a touch in the group of sensors 44 can be used to turn on the lights. Other combination of commands in the different groups can perform other functions. For example, the appropriate sequence of commands based on the touch pattern can permit a user to turn on the radio, roll up the windows of a car, engage alarm systems, or perform other functions, many of which are explained on page 8, lines 10-23 of the application as filed.

Abramov has none of the features as claimed in claim 1. He does not teach that the sensors are segmented into various groups. Instead, all Abramov teaches is that if a fingerprint matches or fails to match a stored fingerprint, a signal is emitted to open or arm a lock. There is no suggestion that the input pad has been organized into a plurality groups of sensing devices, each group being functionally segmented from each other.

As discussed above, Abramov does not teach or suggest a plurality of groups of the position sensing devices. Applicants respectfully submit that claim 1 and all claims depending therefrom, claims 2-9, are allowable over Abramov.

Setlak has no relevance to the claim invention of claim 5. Setlak certainly does not show 3 segmented groups, one group inside another and another group inside this. Setlak merely shows one group, the entire way. While the Examiner may assert that Setlak's array is in a circle, this is not relevant to and does not teach having the array electronically segmented into groups, each group being circular.

Claim 10 is also directed to an apparatus for remotely controlling automobile functions comprises that a housing, a semiconductor substrate, a power source, a transmitter, a plurality of position sensing devices, and a circuit coupled to each group. Claim 10 further recites that the position sensing devices is organized into a plurality of segmented groups.

Abramov does not teach or suggest a plurality of segmented groups of the position sensing devices.

Claim 10 is believed patentable as originally submitted. Abramov completely fails to teach or suggest a number of features directly specified in claim 10. Specifically, claim 10 specifies a housing and a semiconductor substrate within the housing. Within the same housing, claim 10 specifies that a power source is provided and in addition, a transmitter is within the same housing. Abramov completely fails to suggest a power source within the housing and a transmitter within the same housing as the power source and the semiconductor substrate. This permits the invention of claim 10 to be portable. Namely, as shown in figure 1 of the present application, a user may carry the apparatus around in their pocket and then remotely controlled an automobile function. Since the power source is within the same housing, which also has the semiconductor substrate in the transmitter once the command input has been received by the position sensing devices, the power source to control the circuit is within the same housing and the transmitter to transmit the information to a remote location is also within the same housing.

Abramov, on the other hand, does not disclose his power source with respect to the fingerprint sensing circuit. Certainly, he does not disclose or even discuss that a power supply source is within the same housing. Instead, he shows in figures 9 and 10 that his input device has a wire connection to another device, such as a TV display or a computer. Since he does not discuss the source of power, it is not possible that he teaches that the power source is within the same housing. Most likely, the power is line power, or a cable provided so that his device is not portable as is possible with the present invention. Thus, having the power source within the same housing is a significant advantage which cannot be obtained in the prior art.

Claim 11 contains the additional element that a fingerprint identification circuit is part of the same apparatus and is coupled to the same semiconductor substrate which contains the position sensing devices. Since Abramov teaches only a fingerprint sensing circuit and does not teach a plurality of position sensing devices segmented into separate groups, claim 11 is also patentable in light of the art.

Claim 13 contains patentable subject matter beyond the patentability of claims 11 and 10. Claim 13 specifies that there is an enable circuit, which enables commands to be output

by the transmitter only after a fingerprint is recognized. Certainly, Abramov does not teach the output of many commands, but merely an indication of whether a match occurred or not.

Claim 15 is directed to a method of sensing input from a finger of a user comprises that sensing a first touch location, sensing a second touch location, comparing an input location sequence of the first and second touch locations to a set of reference location sequences stored in a memory, outputting a signal indicating a match, and performing a pre-programmed function. Abramov does not teach or suggest comparing an input location sequence of the first and second touch locations to a set of reference location sequences. Applicants respectfully submit that claim 15 is allowable for the reasons why claim 1 is allowable, and all claims depending therefrom, claims 16-23, are allowable over Abramov.

One aspect of the present invention can be seen from original claim 17. As specified in claim 17, a sample fingerprint pattern is received on the substrate. The fingerprint pattern is then compared to a plurality of stored reference patterns. A signal is output indicating if there is a match between the input pattern and a stored pattern. If there is such a match, then the user is permitted to input commands using the same substrate. This two function operation of the same substrate is novel and unobvious in light of the prior art.

As explained in more detail on pages 8 and 9, one of the distinct advantages of the present invention is that it can be used for both fingerprint pattern recognition and also input in a plurality of different commands. See for example page 6, lines 5-22; page 8, lines 24-29; and page 9, lines 27 to the top of the paragraph at page 10.

Once a user is recognized as an authorized user, the very same set of sensors are then used to receive different commands, as now specified in claim 17 and also in new submitted claims 24-30. One feature of the present invention as specified in claim 17 and the new claims is that the apparatus can be operated in two modes, a first mode which is a fingerprint recognition mode and a second mode which is a command input mode. None of the prior art cited even suggests or discloses these two potential modes of operation. As specified in claims 19 and 20, some of the commands can be carried out independent from the recognition while other of the commands can only be carried out once the recognition has been confirmed. Accordingly, it is believed that these features are patentable in light of the prior art as originally claim. Claim 24

makes clear that the same sensor cells used to perform the fingerprint pattern recognition are also used to receive the command input.

Minor typographical changes have been made to claims 11-14 and 16-22 to make the claims more readable, but do not affect the scope of the claimed subject matter.

Claims 26 specifies that the sensor is placed in a first mode of operation for recognizing a fingerprint pattern and, once the fingerprint pattern is matched with a stored pattern then the device switches to a second mode of operation for receiving command inputs. These command inputs are provided to the same sensors, on the same substrate as we use for the fingerprint recognition. The command inputs may be such things as turn on the lights, lock the doors, unlock the doors, select a radio station or other particular inputs.

Claim 28 is an apparatus claim specifying the respective means for the sensor elements received in a fingerprint pattern and, once a fingerprint pattern has been recognized the same sensor elements including means for receiving command inputs.

In view of the foregoing, Applicants respectfully submit that all of the claims remaining in this application are now in condition for allowance. In the event the Examiner finds minor informalities that can be resolved by telephone conference, the Examiner is urged to contact Applicants' undersigned representative by telephone at (206) 622-4900 in order to expeditiously resolve prosecution of this application. Consequently, early and favorable action allowing these claims and passing this case to issuance is respectfully solicited.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version With Markings to Show Changes Made.**"

Respectfully submitted,
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 1, 2, 4, 11-17, 20 and 22 have been amended as follows:

1. (Amended) ~~A~~ An apparatus comprising:

a substrate;

a plurality of position sensing devices located on the substrate for detecting the presence of an object;

a plurality of groups of the position sensing devices, each group being composed of a plurality of sensing devices and each group being electronically segmented and each group being located at a selected, respective position on the substrate;

an electronic logic circuit coupled to each of the groups for sensing whether a human appendage has been placed adjacent the respective group.

2. (Amended) The apparatus according to claim 1 wherein ~~there~~ the plurality of groups includes at least 3 groups.

4. (Amended) The apparatus according to claim 2 wherein the groups ~~and~~ are positioned with a first group surrounding a second group and the second group surrounding a third group.

11. (Amended) The apparatus according to claim 10, further including:

a ~~finger-print~~ fingerprint identification circuit coupled to the semiconductor substrate for sensing the identity of the a fingerprint placed thereon.

12. (Amended) The apparatus according to claim 11 wherein the fingerprint sensor circuit includes:

a memory for storing a plurality of reference fingerprint sensor patterns;

a comparison circuit for comparing a pattern of a fingerprint placed on the substrate with a reference fingerprint pattern stored in the memory; and

an output circuit that outputs ~~an indication of~~ a signal indicating a match between an input fingerprint pattern and ~~a~~ the reference fingerprint pattern stored in the memory.

13. (Amended) The apparatus according to claim 12, further including an enable circuit coupled to the output circuit for enabling the transmitter to transmit selected commands only after a fingerprint input pattern has matched a reference fingerprint pattern.

14. (Amended) The apparatus according to claim 10, further including:

an automobile;

a receiver circuit coupled to the automobile for receiving input from the transmitter.

15. (Amended) A method of sensing input from a finger of a user comprising:

sensing a first touch location on a substrate at a first time;

sensing a second touch location spaced from the first touch location on ~~a~~ the substrate at a second time, after the first time;

comparing ~~the~~ an input location sequence of the first and second touch locations to a set of reference location sequences stored in a memory;

outputting ~~the identity of~~ a signal indicating a match between the input location sequence and the reference location sequence;

performing a pre-programmed function based the identity of the match.

16. (Amended) The method according to claim 15, further including:

receiving a sample fingerprint pattern on the substrate;

comparing the sample fingerprint pattern to a plurality of stored reference fingerprint patterns;

outputting a signal indicating a match between the sample input pattern and ~~a~~ the stored reference fingerprint pattern; and

performing the pre-programmed function only after ~~a~~ the match has been found between the ~~input~~ sample fingerprint pattern and ~~a~~ reference fingerprint pattern.

17. (Amended) The method according to claim 15, further including:

receiving a sample fingerprint pattern on the substrate;

comparing the sample fingerprint pattern to a plurality of stored reference fingerprint patterns;

outputting a signal indicating whether or not there is a match between the sample ~~input~~ fingerprint pattern and ~~a~~ the stored fingerprint pattern; and

permitting the performing of selected pre-programmed functions before a match has been found between the ~~input~~ sample fingerprint pattern and ~~a~~ the reference fingerprint pattern.

20. (Amended) The method according to claim 19 wherein the function of locking the doors is permitted to be performed before ~~a~~ the match is found.

22. (Amended) The method according to claim 15, further including:

sensing if a first touch occurred in a bottom portion of the substrate; and

~~sending~~ sensing if a last touch occurred in a top portion of the substrate.

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